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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/522,461 | 01/25/2005 | Do-Young Jeong | 1455-050205 | 7554 |

7590 03/14/2007
Kent E Baldauf
700 Koppers Building
436 Seventh avenue
Pittsburgh, PA 15219-1818

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| EXAMINER |
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WONG, EDNA

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| ART UNIT | PAPER NUMBER |
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1753

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 03/14/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/522,461

Applicant(s)

JEONG ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

This is in response to the Amendment dated January 19, 2007. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Response to Arguments

Drawings

The drawings have been objected to because the word "metastabl" in the ordinate of Fig. 4 should be amended to the word -- metastable --.

The objection of the drawings has been withdrawn in view of Applicants' amendment.

Specification

I. The abstract of the disclosure is objected to because the word "said" is used in lines 3-7 and 9-12.

The objection of the abstract of the disclosure has been withdrawn in view of Applicants' amendment.

II. The disclosure has been objected to because of minor informalities.

The objection of the disclosure has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 112

Claims **3-9** and **11-12** have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 3-9 and 11-12 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

Claims **1-12** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **FR 2,790,974** ('974) in combination with **Eerkens** (US Patent No. 5,221,446).

The rejection of claims 1-12 under 35 U.S.C. 103(a) as being unpatentable over FR 2,790,974 ('974) in combination with Eerkens is as applied in the Office Action dated July 24, 2006 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that the Scheibner method uses the field ionization method, while in the present method the target isotope is photoionized by using IR lasers.

In response, Scheibner teaches a photoionization method (= la figure 5 est une illustration des trajets de photo-ionization pour le thallium qui sont utilisés dans la présente invention) [col. 9, lines 7-9].

As to using IR lasers, Scheibner teaches using a Ti:sapphire laser (= d'un crystal de titane/saphir possédant un laser germe continu injecté) [page 12, lines 4-8]. A

titanium:sapphire laser emits near-infrared light, tunable in the range from 650 to 1100 nm.

Furthermore, the claims as presently written do not specifically recite using IR lasers. It is well settled that unpatented claims are given the broadest, most reasonable interpretation and that limitations are not read into the claims without a proper claim basis therefor. *In re Prater* 415 F. 2d 1393, 162 USPQ 541 (CCPA 1969); *In re Zeltz* 893 F. 2d 319, 13 USPQ 1320.

Applicants state that the present invention experimentally indicates that the target isotopes can effectively be photoionized using a laser having the wavelength of 1064 nm.

In response, Scheibner teaches photoionizing using a laser having the wavelength of 1064 nm (= l'oscillateur maitre est egalement pompe par des lasers Nd/YAG impulsionnels a doublage de frequence) [page 12, lines 9-12]. A Nd:YAG laser typically emit light with a wavelength of 1064 nm, in the infrared.

Furthermore, the claims as presently written do not specifically recite using a laser having the wavelength of 1064 nm. It is well settled that unpatented claims are given the broadest, most reasonable interpretation and that limitations are not read into the claims without a proper claim basis therefor. *In re Prater* 415 F. 2d 1393, 162 USPQ 541 (CCPA 1969); *In re Zeltz* 893 F. 2d 319, 13 USPQ 1320.

Applicants state that according to the Scheibner method, thallium atoms are excited to a Rydberg state by using a single frequency pulse laser having narrow linewidth which is not resonant at the intermediate state. However, according to the present method, the continuous wave (CW) laser to produce the first frequency photons has narrow linewidth but is resonant at the intermediate excite state (26477.5 cm^{-1}), and the pulse lasers to produce the second and third frequency photons do not have any restriction on linewidth.

In response, claim 1 as presently written do not recite exciting the thallium atoms to a Rydberg state by using a single frequency pulse laser having narrow linewidth which is not resonant at the intermediate state; and using a continuous wave (CW) laser to produce the first frequency photons has narrow linewidth but is resonant at the intermediate excite state (26477.5 cm^{-1}) [in claims 2 and 3]. It is well settled that unpatented claims are given the broadest, most reasonable interpretation and that limitations are not read into the claims without a proper claim basis therefor. *In re Prater* 415 F. 2d 1393, 162 USPQ 541 (CCPA 1969); *In re Zeltz* 893 F. 2d 319, 13 USPQ 1320.

As to using pulse lasers to produce the second and third frequency photons, the rejection is not overcome by pointing out that one reference does not contain a particular limitation when reliance for that teaching is on another reference. *In re Lyons* 150 USPQ 741 (CCPA 1966). Moreover, it is well settled that one cannot show nonobviousness by attacking the references individually where, as here, the rejection is

based on a combination of references. *In re Keller* 208 USPQ 871 (CCPA 1981); *In re Young* 159 USPQ 725 (CCPA 1968).

Applicants state that according to the Scheibner method, for high selectivity and high excitation efficiency, laser powers and frequencies should be carefully controlled, whereas according to the present method, high selectivity and high excitation efficiency are easily acquired and commercially practical.

In response, the Applicants have a different reason for, or advantage resulting from doing what the prior art relied upon has suggested, it is noted that it is well settled that this is not demonstrative of nonobviousness. *In re Kronig* 190 USPQ 425, 428 (CCPA 1976); *In re Linter* 173 USPQ 560 (CCPA 1972); the prior art motivation or advantage may be different than that of Applicants while still supporting a conclusion of obviousness. *In re Wiseman* 201 USPQ 658 (CCPA 1979); *Ex parte Obiaya* 227 USPQ 58 (Bd. of App. 1985) and MPEP § 2144.

Response to Amendment

Drawings

The drawings were received on January 19, 2007. These drawings are acceptable.

Claim Objections

Claim 2 is objected to because of the following informalities:

Claim 2

line 1, the word "photon" should be amended to the word -- photons --. See claim 1, line 4; and claim 3, line 2.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 3 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3

line 3, it appears that "said atoms of thallium" is the same as the plurality of ground state thallium atoms recited in claim 1, line 12. However, it is unclear if they are.

Furthermore, the photons of the first frequency pump ground state thallium atoms as recited in claim 1. This is different from the photons of the first frequency pumping non-ground state thallium atoms.

Claim 12

line 1, recites "(Canceled)" as the status identifier. It is unclear if claim 12 is

canceled.

line 2, it appears that "an intermediate, resonant state" is the same as the intermediate, resonant state recited in claim 6, lines 3-4. However, it is unclear if it is. If it is not, then what is the relationship between the two intermediate, resonant states?

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

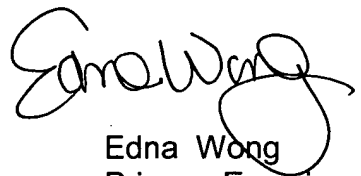
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-

1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Edna Wong
Primary Examiner
Art Unit 1753

EW
March 11, 2007